

little digression may be excused. Why should not both Ciliata and Suctoria be treated as classes? Conceded that Bütschli is right in regarding the tentacles as mouths, and I believe so, that would not necessitate ranging them together. The possession of cilia by the Acinetina, in the early stages of development, has possibly been overestimated. How many features are shown in the earlier or larval stages of other and higher animals to disappear at a later period, *e. g.* cilia in Mollusca (velum) and Echinodermata? If an amœboid stage, or the development and disappearance of flagella, were accorded so much significance, how should we then, with good reasons, regard the Rhizopoda, Sporozoa, and Flagellata as so many classes? The close resemblance of the phenomena of conjugation in the Ciliata and Suctoria is certainly significant; but we have essentially identical ways of fecundation &c. of the ova in different main groups of Metazoa. In their definite formations the Ciliata and Suctoria are as much different from each other, or much more so, than, for example, the classes of vertebrates and arthropods. The question seems to be rather one of logic: if the Suctoria in their definite stage are to be considered a degenerated type of Ciliata, they must be ranged under the same head as a subgroup; if not so, they may well rank as a class at the side of the Ciliata.

New Philadelphia, Ohio,
April 1898.

BIBLIOGRAPHICAL NOTICES.

A Natural History of the British Lepidoptera. A Textbook for Students and Collectors. By J. W. TUTT, F.E.S. Vol. I. Sonnenschein, January 1899. 8vo. Pp. vi, 560.

To the superficial mind it might appear that there was already a sufficiency of works on British Butterflies and Moths; and yet many of those which have recently appeared treat of the subject from an enlarged standpoint, and cannot be denounced as superfluous. Among these we have met with none, not even Mr. Barrett's, which approaches the work which Mr. Tutt has undertaken, for comprehensiveness and richness of detail. The amount of matter, too, which it contains is enormous, for it is so closely printed, and small type is so freely used, that every page probably contains on an average from two to four times the amount of matter which might reasonably be expected to occupy a page of similar dimensions.

The first part of the book may be regarded as introductory, and contains chapters on the origin of the Lepidoptera; the ovum, embryology, and parthenogenesis; external and internal structure

of larvæ; variation of imagines, protective coloration, and defensive structures of larvæ; and classification. The Phylogenetic Tree illustrating the last section is extremely complicated, and will be found worth study, as graphically illustrating the author's views on the relation of the various groups of Lepidoptera.

It is not possible to speak of this portion of the book in detail. British and foreign authors are freely quoted, but large portions are founded on the direct observations of the author himself, or cast into a form regulated by his extensive knowledge of the subject.

The second part of the volume contains the life-history of a portion of the "Sphingo-Micropterygid stirps," working from the more generalized to the more specialized super-families, according to the system selected by the author. Only four super-families are discussed in the first volume—the Micropterygides, the Nepticulides, the Cochlidides (or Euclideanes), and the Anthrocerides—comprising about 100 species, giving an average of three or four pages to each species. In many cases, however, this limit is far exceeded, the notice of *Anthroceres filipendule* alone filling twenty-five pages, under the various heads of synonymy, original description, imago, sexual dimorphism, variation (with notices of varieties from α to ξ), ovum, larva, variation of larva, cocoon, pupa, dehiscence, food-plants, parasites, habits and habitat, time of appearance, localities, and distribution.

One commendable practice of the author's is to reprint the original description, whether short or long. In the case of *A. filipendule*, a Linnean species, it happens to be barely two lines long; but in the case of some of the *Nepticula* it runs to nearly a page. The relationships between foreign and British genera and species are likewise freely discussed.

We have said enough to show the enormous compendium of information which Mr. Tutt has brought together from all sources, published and unpublished, making his book a regular cyclopædia on almost all subjects connected directly or indirectly with British Lepidoptera. We hope that the author may receive some little return for the unavoidable amount of weary drudgery (to say nothing of the time spent in really interesting work) that he must have devoted to his self-imposed task, in the grateful recognition of his labours by his fellow Entomologists.

All about Birds. By W. PERCIVAL WESTELL.

'Feathers' Publishing Co. 8vo.

THIS should have been entitled 'The Young Bird-lover's Scrap-book.' It is nothing whatever but a collection of cuttings, more or less closely relating to birds, of varying degrees of merit, culled from good, bad, or indifferent sources; these are put together in no sort of order, but appear just as taken haphazard from the author's lucky-bag.

Some of the statements reproduced in this *olla podrida* are rather startling. As one who knows experimentally rather more than the